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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,453	11/24/2003	Vladimir Fuflyigin	13445-026001 / OG-16	4085
26161	7590	02/15/2006	EXAMINER	
FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			TUROCY, DAVID P	
			ART UNIT	PAPER NUMBER
			1762	
DATE MAILED: 02/15/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/720,453

Applicant(s)

FUFLYIGIN, VLADIMIR

Examiner

David Turocy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS; WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-47 and 49-79 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-47 and 49-79 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/25/05, 7/27/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/25/2005 has been entered.

### ***Response to Amendment***

2. The applicant's amendments, filed 11/25/2005, have been fully considered and reviewed by the examiner. The examiner notes the cancellation of claim 48 and the addition of new claims 49-79. Claims 1,3-47, and 49-79 remain pending.

### ***Response to Arguments***

3. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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- 5. Claims 36-46 and 63-68 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The added limitation "the introduction of the first gas composition reduces the undesired impurities on the inner surface relative the introduction of a gas composition including the second compound" appears to be new matter. The examiner cannot locate proper support for such a limitation in the specification as filed and if the applicant can disclose paragraph or line and column numbers for support for such a limitation, then the examiner will withdraw the rejection.

- 6. Claims 36-46 and 63-68 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a first compound comprising nitrous oxide in order to deposit an oxide onto a chalcogenide, does not reasonably provide enablement for a first gas changed into a second gas which adversely reacts with a first material to form impurities and the introduction of the first gas composition reduces the undesired impurities on the inner surface relative the introduction of a gas composition including the second compound as claimed. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. While the specification clearly enables one of ordinary skill in the art that a first gas of NO<sub>2</sub> and substrate

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material comprising a chalcogen, and a second material of an oxide. The specification does not provide additional direction or working examples to one of ordinary skill in the art to provide any combination of various gases and materials, each of which is within the scope of the claimed invention, wherein the second compound formed from a first compound adversely reacts with a first material and forms impurities and the first gas compound reduces such impurities without undue experimentation.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

8. Claims 36-46, 61-68 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 36 includes the limitation "undesired impurities on the inner surface of the tube and the introduction of first gas composition reduces the undesired impurities on the inner surface relative the introduction of a gas composition including the second compound" is awkwardly written.

In addition the examiner notes claim 36 requires the "introduction of a gas composition including the second compound", however, the claim requires introducing the first gas composition with a first compound and converting the first compound to a second compound, but does not previously disclose "introduction of a gas composition including a second compound", therefore there is insufficient antecedent basis for this limitation in the claim.

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Claim 46 recites the limitation "the first glass" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 61 recites the limitation "the tube" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 62 recites the limitation "the portions" in line 1. There is insufficient antecedent basis for this limitation in the claim.

The other dependant claims do not cure the defects of the claims from which they depend.

### ***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 47, 69-74, 76-78 are rejected under 35 U.S.C. 102(e) as being anticipated by WO 02/084345 by Ahmed et al, hereafter Ahmed.

Ahmed discloses a method of forming a dielectric waveguide using MCVD, wherein a first chalcogenide layer is deposited on the inside of the tube and then an oxide layer is deposited on the chalcogenide layer (Page 3, Page 5).

Claim 69 and 70: Ahmed discloses a refractive index difference between the first and second layer within the range as claimed (page 10).

Claim 71: Ahmed discloses the layers of the chalcogenide and oxide are layers of a preform and the method comprises drawing the preform to form a photonic crystal fiber (Page 9).

Claim 72: Ahmed discloses the fiber includes a core and a confinement region, wherein the confinement region includes the oxide and chalcogenide layers (Page 7).

Claim 73: Ahmed discloses the core has a lower average index than the confinement region (Page 24).

Claim 74: Ahmed discloses using a polymer dielectric layer in the confinement region (page 7).

Claims 76 and 77: Ahmed discloses including alternating and repeating layer in the confinement region (Page 7).

### ***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 3-13, 15-21, 23-25, 27, 29, 30-33, 35, 52, 59, and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 060085 (EP 085) in view of

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*Plasma-enhanced chemical vapor deposition of Ge-Se and Ge-S compound* by Blanc et al., hereafter Blanc

EP 085 is applied here for the same reasons as set forth in the prior office action dated 7/22/2005. EP 085 discloses use of a flame MCVD deposition process rather than an rf or microwave induced plasma method for depositing the glass.

However, Blanc discloses using PECVD rather than the conventional MCVD results in high deposition rates and discloses the range of compositions and the number of refractive modifiers are less limiting than in the MCVD method (Page 917 and 921).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify EP 085 to use the PECVD method as suggested by Blanc with a reasonable expectation of success to reap the benefits of depositing glasses with an increased range of composition and refractive modifiers.

Claims 3-5, 7-9: Blanc discloses using rf or microwave induced plasma (Page 918 section 2.1).

Claims 13, 15-16, 21, and 23-24: Blanc discloses using a carrier gas comprising argon (Page 918 section 2.2.1).

Claims 18 and 27: Blanc discloses using a pressure of 15 Torr (Page 918 section 2.1).

Claim 52: Blanc discloses using a temperature in the range as claimed (Page 918 section 2.2.1).



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13. Claims 1, 3-13, 15-21, 23-29, 30-33, 35, 49-52, 54-56, 58-60, and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahmed in view of Blanc.

Ahmed is applied here as applied above, however, Ahmed teaches of MCVD deposition process rather than an rf or microwave induced plasma method for depositing the glass layers.

However, Blanc discloses using PECVD rather than the conventional MCVD results in high deposition rates and discloses the range of compositions and the number of refractive modifiers are less limiting than in the MCVD method (Page 917 and 921).

Blanc discloses using PECVD for both chalcogenide and oxide glass layers (Page 919).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Ahmed to use the PECVD method as suggested by Blanc with a reasonable expectation of success because Blanc to reap the benefits of depositing glasses with an increased range of composition and refractive modifiers.

Claims 3-5, 7-9: Blanc discloses using rf or microwave induced plasma (Page 918 section 2.1).

Claims 11, 12, 19 and 20: Blanc discloses using chloride compounds (Page 918, section 2.2).

Claims 13, 15-16, 21, and 23-24: Blanc discloses using a carrier gas comprising argon (Page 918 section 2.2.1).

Claims 18 and 27: Blanc discloses using a pressure of 15 Torr (Page 918 section 2.1).

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Claim 52: Blanc discloses using a temperature in the range as claimed (Page 918 section 2.2.1).

Claim 57: Ahmed in view of Blanc discloses all the limitations of this claim, however, they fail to explicitly disclose a polymer layer farther away from the core than the first and second glass layers. However, Ahmed clearly discloses arranging the layers of very different refractive indices is a result effective variable wherein the proper arrangement of high-index and low-index determines the properties of the optical fiber (Pages 23-24).

Therefore it would have been obvious to one skill in the art at the time of the invention was made to determine the optimal placement for each of the first glass layer, second glass layer, and polymer layer used in the process of Ahmed in view of Blanc, through routine experimentation, to impart the optical fiber with the appropriate contrast between the high and low index layers to impart the fiber with the desired properties.

14. Claims 12 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 085 in view of Blanc and further in view of US Patent 5344792 by Sandhu et al. hereafter Sandhu

EP 085 in view of Blanc teaches supplying the reactants using argon as the carrier gas but fails to disclose using nitrogen. However, because Sandhu discloses, at column 6, lines 40-44, nitrogen is a known equivalent for argon during PECVD processes. Substitution of equivalents requires no express motivation. *In re Fount*, 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152, USPQ (CCPA 1967).

15. Claims 12 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahmed in view of Blanc and further US Patent 5344792 by Sandhu et al. hereafter Sandhu

Ahmed in view of Blanc teaches supplying the reactants using argon as the carrier gas but fails to disclose using nitrogen. However, because Sandhu discloses, at column 6, lines 40-44, nitrogen is a known equivalent for argon during PECVD processes. Substitution of equivalents requires no express motivation. *In re Fount*, 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152, USPQ (CCPA 1967).

16. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP 085 in view of Blanc and further in view of Francis et al. (5,609,660).

EP 085 in view of Blanc discloses a glass tube rather than a polymer. However, because Francis discloses at col. 3, lines 15-30 that polymeric optical fibers are useful for forming optical waveguides, it would have been obvious to use a polymeric tube for the layers of chalcogenide glass as this is a conventional waveguide material.

17. Claims 34, 61, and 79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahmed in view of Blanc and further in view of Francis et al. (5,609,660).

Ahmed in view of Blanc discloses a glass tube and also discloses using polymers, such as polysulfones and fluoropolymers (Ahmed page 15), but fails to

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disclose using the polymer as the tube. However, because Francis discloses at col. 3, lines 15-30 that polymeric optical fibers are useful for forming optical waveguides, it would have been obvious to use a polymeric tube, including those disclosed by Ahmed as useful for optical fibers, for the layers of chalcogenide glass and oxide as this is a conventional waveguide material.

18. Claim 75 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ahmed.

Ahmed discloses all the limitations of this claim as discussed in the 35 USC 102(e) rejection above, however, they fail to explicitly disclose a polymer layer farther away from the core than the first and second glass layers. However, Ahmed clearly discloses arranging the layers of very different refractive indices is a result effective variable wherein the proper arrangement of high-index and low-index determines the properties of the optical fiber (Pages 23-24).

Therefore it would have been obvious to one skill in the art at the time of the invention was made to determine the optimal placement for each of the first glass layer, second glass layer, and polymer layer used in the process of Ahmed, through routine experimentation, to impart the optical fiber with the appropriate contrast between the high and low index layers to impart the fiber with the desired properties.

### ***Conclusion***

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. WO 02/061467 discloses a waveguide including chalcogenide,

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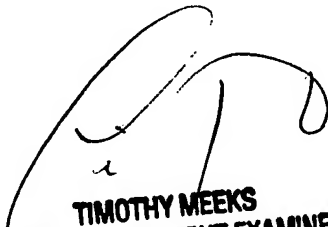
oxide, and polymer layers with properties similar to those as claimed but does not teach a method of deposition.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Turocy whose telephone number is (571) 272-2940. The examiner can normally be reached on Monday-Friday 8:30-6:00, No 2nd Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Turocy  
AU 1762



**TIMOTHY MEEKS**  
**SUPERVISORY PATENT EXAMINER**